RESERVE COPY

PATENT SPECIFICATION

DRAWINGS ATTACHED

1,008,015

1,008,01!

Date of Application and filing Complete Specification March 12, 1963.
No. 9729/63.
Two Applications made in Japan (No. 12907 and 52495) on March 15, 1962.
Complete Specification Published Oct. 22, 1965.
© Crown Copyright 1965.

Index at acceptance. —B5 L(2, 5A); A1 B(2B9, 2E4); B3 D(1C, 1D1, 2A14, 2A16, 2A20); F2 P(1A 1B5B); F2 U13A

Int. Cl.:—B 27 b//A 01 b, B 24 b, F 06 c, l

COMPLETE SPECIFICATION

A Portable Device for Carrying on an Operator's Back

ERRATUM

SPECIFICATION No. 1,008,015

Page 2, line 47, *for* indistinct word *read* "frame"

THE PATENT OFFICE
2nd December 1968

to be light since if it is all one can do to raise and carry it the working ability of that person is nothing, and it is quite plain that the lighter the device is the greater is the operator's working ability. A second requisite is that, as the machine must be operable on an operator's back, consideration should be given to the prevention of transmission of its vibrations and impetuses to the operator's body. With some existing machines, if the operator carries the operating engine on his back for even thirty minutes, his hands and shoulders tend to become numbed insensible and so he can not continue working any longer. A third requisite is to make it possible for the operator readily to change the direction of the tool while operating. This is because all fields are not plane and a discoid cutter or brush should be moved along always parallel to the sloping surfaces as of [illegible] pipe being connected with the bearing for a tool by means of a connecting rod in such a way that it can be slid on the inner inflexible pipe so as to turn the tool in any desired direction.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figures 1*a* and 1*b* are a side view and a plane view, respectively, showing the general view of a device exemplifying this invention carried on an operator's back;

Figures 2*a*, 2*b*, 2*c* and 2*d* are a side view of the fitting frame of the engine, a front view, and a plane view, of the above seen to the direction of the arrow from the line x—x, and a cross sectional view, of the principal part, respectively; and

Figures 3*a*, 3*b*, 3*c*, 3*d*, 3*e* and 3*f* are side views of the driving axis and cross sectional views showing parts of the above in detail.

SEE ERRATA SLIP ATTACHED

BNSDOCID: <GB___1008015A__I_>

PATENT SPECIFICATION

DRAWINGS ATTACHED

1,008,015

1,008,015

Date of Application and filing Complete Specification March 12, 1963.
No. 9729/63.
Two Applications made in Japan (No. 12907 and 52495) on March 15, 1962.
Complete Specification Published Oct. 22, 1965.
© Crown Copyright 1965.

Index at acceptance. —**B5** L(2, 5A); **A1** B(2B9, 2E4); **B3** D(1C, 1D1, 2A14, 2A16, 2A20); **F2** P(1A15C, 1B5B); **F2** U13A

Int. Cl.:—B 27 b//A 01 b, B 24 b, F 06 c, l

COMPLETE SPECIFICATION

A Portable Device for Carrying on an Operator's Back

I, SAKUJI YAMADA, of No. 1 Aza Okunishiyama Kuruma Sumaku, Kobe, Japan, a Japanese citizen, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a portable device which has motive power, such as an internal combustion engine, which may be carried on an operator's back, and which may drive through an inflexible pipe covering a middle part of a driving steel wire rope of about two meters in length, a controllable tool attached to the tip of the steel wire rope. This tool may be for performing such work as hoeing weeds, clipping bushes, lopping off branches and felling trees in forests, lumbering, and removing, cleaning and grinding off of rust from the outside plating of a hull or chassis.

First, it is necessary for this kind of device to be light since if it is all one can do to raise and carry it the working ability of that person is nothing, and it is quite plain that the lighter the device is the greater is the operator's working ability. A second requisite is that, as the machine must be operable on an operator's back, consideration should be given to the prevention of transmission of its vibrations and impetuses to the operator's body. With some existing machines, if the operator carries the operating engine on his back for even thirty minutes, his hands and shoulders tend to become numbed insensible and so he can not continue working any longer. A third requisite is to make it possible for the operator readily to change the direction of the tool while operating. This is because all fields are not plane and a discoid cutter or brush should be moved along always parallel to the sloping surfaces as of mountains, the uneven surfaces as of hollow lands or of tortuous foot paths, or the curved surface of the outside plating of the hull. A fourth requisite is that the various kinds of tools are easy changeable and the equipment is also easy to assemble and disassemble.

According to the invention I provide a portable device for carrying on an operator's back, which device includes an outer frame arranged to be attached onto the operator's back, an inner frame within which an engine is fixed, the inner frame being pivotted at upper and lower points to the outer frame, a steel wire rope connected to the engine for transmitting drive to a working tool, which rope is covered by a flexible metallic pipe having an inside diameter slightly larger than the outside diameter of the steel wire rope, the part of the said flexible metallic pipe intermediate its ends being covered by two inflexible metallic pipes, the outer inflexible metallic pipe being connected with the bearing for a tool by means of a connecting rod in such a way that it can be slid on the inner inflexible pipe so as to turn the tool in any desired direction.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figures 1*a* and 1*b* are a side view and a plane view, respectively, showing the general view of a device exemplifying this invention carried on an operator's back;

Figures 2*a*, 2*b*, 2*c* and 2*d* are a side view of the fitting frame of the engine, a front view, and a plane view, of the above seen to the direction of the arrow from the line x—x, and a cross sectional view, of the principal part, respectively; and

Figures 3*a*, 3*b*, 3*c*, 3*d*, 3*e* and 3*f* are side views of the driving axis and cross sectional views showing parts of the above in detail.

SEE ORIGINAL IN ATTACHED

BNSDOCID: <GB___1008015A__I_>

In figures 1*a* and 1*b* an internal combustion engine E is fixed on the operator's back with a fitting frame. A discoid cutter A for hoeing weeds is connected to the engine E by a flexible metallic pipe drive F which covers the whole length of a steel wire rope about two meters long connecting the axis of the engine E and that of the discoid cutter A. Interior and the exterior inflexible metallic pipes P_1 and P_2 cover the flexible metallic pipe F for about one meter at its middle part between the engine E and the discoid cutter A. Handles H_1 and H_2 project from the inflexible metallic pipes P_1 and P_2, and a connecting pipe *l* connects the bearing of the discoid cutter A with the exterior metallic pipe P_2. The handles H_1 and H_2 are held by the operator with each of his hands, the positions of the handles H_1 and H_2 relatively to one another is arranged to change the direction of the tool A at will.

Figures 2*a*, 2*b*, 2*c* and 2*d* show the fitting frame of the engine E. An outer frame 1 is in the shape of the letter L, and a ribbon plate projecting horizontally from the middle of the upper end of the principal framework is made from a bent pipe. An elastic pad 2 is fitted on the back of the outer frame 1, and shoulder belts 3 are respectively fitted to the end of the horizontal ribbon plate on the outer frame 1 and to either corner of the lower part, so that the outer frame 1 is held directly on the operator's back. An inner frame 4 is composed of a framework 4*a* made from a pipe rectangularly bent and upper and lower projecting ribbon plates 4*b*. The case of the engine E is firmly fixed to the inner frame 4 with bolts 5 as shown in Figure 2*b*. The upper and lower ribbon plates 4*b* are respectively bent a little horizontally at their tips, the upper tip being attached to the ribbon plate 1*a* of the outer frame 1 by a pin 6, and the lower tip being attached by an upright pin 8 to the cross beam 1*b* of the outer frame with a rubber seat 7 between as shown in Figure 2*d*. The ribbon plates 4*b* are thus contained within the outer frame 1 and are capable of a turning movement. The engine E fixed to the inner frame 4 is supported by the upper pin 6 and the lower pin 8 respectively at one point in the outer frame 1 and when the frame 1 is held on the operator's back with the shoulder belts 3 is capable of its own turning movement.

A pulley 9 is attached to the projecting end of a driving shaft of the engine E at the rear part of the inner frame 4. Another pulley 10 is linked with a pulley 9 by a driving belt 11, the axis of the pulley 10 being supported by an embraced bearing 12 at the lowest end of the inner frame 4. The other end juts out from the bearing 12 and is connected with the end of the drive W. A fuller explanation of the linking mechanism and the driving axis will be given later.

A roller 13 of a clutch is arranged to put the belt 11 on and off, and a connecting rod 14 holds the roller 13 at one end, with its other end pivotted to a cross-piece in the middle of the main body of the inner frame 4*b*. It is so arranged as to be pulled by a spring 15 in the direction of putting the belt 11 off and, when a string 36 is pulled, to push the revolving wheel 13 to put the belt 11 on.

The characteristics of the construction of the above mentioned fitting frame lie in these three points: that the inner frame 4 is fitted to the outer frame 1 at two points, an upper point 6 and a lower point 8, in such a way that it is capable of turning and also a rubber seat 7 is inserted at the lower part; that the driving axis W is directed outwardly from the operator's back from the rear part of the inner frame, so that when the engine E is put on the operator's back the drive axis, as shown in Figure 1*b*, initially points backwardly from the operator's back and then bending gently before coming to his front; and that a connecting mechanism for the belt is capable of slipping so as to put the belt on and off easily and is fitted midway between the axis of the engine E and the drive axis.

Since the inner frame 4 of the fitting frame is fitted to the outer frame 1 at two points, the vibration of the engine E is balanced at the two pivot points, and the vertical vibration is deadened by the rubber seat 7, thus considerably reducing the amount of vibration conveyed to the operator's shoulders and hands. If the internal combustion engine alone is set on the ground and started up, its own vibrations cause it to jump and move about, but when it is fitted to the frame of this invention and started up, it conveys only the smallest amplitude of vibration to the frame and does not show any of such a phenomenon as jumping and moving about. When, for example, the engine is supported at two to four upper and two to four lower pivot points instead of one upper and one lower pivot point as shown in this invention, the phenomenon changes completely and it is observed that the frame itself is violently vibrated. Thus, it is believed to be important in reducing the effect of the vibration of the engine that it is supported at only one upper and one lower point.

Since the engine is so fitted as to be capable of turning in the outer frame 1 and the driving axis projects from the operator's back and from the back of the inner frame 4, this has the advantage of making the change of direction of the tool comparatively easy. It will be seen from Figure 1*b*, that as the driving axis goes to the operator's front round his side in a gentle curve, the tool can be horizontally turned to as large an extent as 180° in front of the operator without being

BNSDOCID: <GB___1008015A__I_>

sharply bent in its middle. If the position of the tip of the driving axis is opposite to that shown in the drawings, the extent of the turning angle of the engine is narrowed and it happens that in a turning position at some angle of the engine, the tool cannot be directed to the proper position without bending the driving axis sharply. Thus, with the help of a driving belt mechanism capable of slipping installed between the engine axis and the tip of the driving axis, even when an unusually excessive resistance is given to the tool such as when the cutter hits on soil or stones in the hoeing of weeds, the engine is easily made to skid with this slip and the working steel wire rope acting as the driving axis can escape fracture.

Figures 3*a* and 3*f* show the drive F. This drive includes a steel wire rope W as its main constituent covered as reinforcement with a flexible metallic pipe F^1 along the whole length and the inflexible metallic pipes P_1 and P_2 cover the exterior of the middle part of the flexible metallic pipe F^1 and serve both as a control and as a reinforcement.

Between the outside diameter of the steel wire rope W and the inside diameter of the flexible metallic pipe E is a small gap so that they are almost in contact with one another. Of some drives hitherto well known of which the steel wire rope is a constituent, the steel wire rope is usually covered with a flexible metallic pipe, whose inside diameter is, as a rule, several times as broad as the outside diameter of the steel wire rope W. Thus, for instance, where the steel wire rope W was 10 mm. in the outside diameter, the flexible metallic pipe F^1 of 60 to 80 mm. in diameter is used to strengthen the steel wire rope. This is to reduce the chance of snapping the steel wire rope, keeping it in its original straight line condition by checking both its ends with the wall of a thick covering pipe large in diameter so as not to approach each other, as the steel wire rope, when it is given a large strain or torque, is twisted into a spiral shape while the action arises for both ends to approach each other and it has a nature to snap at the point where the curvature is greatest. However, when this thick flexible metallic pipe F is used, the driving axis, besides being heavy in weight, does not bend easily at will and the effectiveness found in the steel wire rope W chosen as the drive comes to nothing. In this invention, if the outside of the steel wire rope W is determined to be 8 mm. the flexible metallic pipe chosen may be less than 9 mm. in its inside diameter. Thus, the weight of the drive is considerably reduced. Also, as the gap between the inside diameter of the flexible metallic pipe F^1 and the periphery of the steel wire rope W becomes less, the circumscribing metallic pipe E performs a working similar to that of a bearing which is made to support the steel wire rope W. The metallic pipe F hitherto in common use is, by means of the inflexibility which is quite different in nature from flexibility, prevents the steel wire rope from being twisted by the excessive rotation, but with the flexible metallic pipe F^1 of this invention, each section of the pipe becomes a bearing of the steel wire rope and the pipe F^1 cooperates with these sections to prevent the excessive twisting and performs reinforcement of the rope without reducing its flexibility.

The flexible metallic pipe F^1, as it performs in this invention, has a different function from that of the well known use as mentioned above, is made strong, as shown in Figure 3*d*, with coiled piano wire 32 in the shape of a spiral as an inner layer and ribbon steel wire of nearly a triangular section coiled in the shape of a spiral inserted from the outside between the interstices of the spiral piano wire 32. For example, when the internal combustion engine on the operator's back is of a capacity of 1.2 HP., the steel wire rope is 8 mm. in diameter and the flexible metallic pipe is about 36 mm. in outside diameter.

A second characteristic point of the drive of this invention is that the middle part of the flexible metallic pipe F^1 is covered with the hard and inflexible interior and the exterior metallic pipes P_1 and P_2. The drive from the engine E on the operator's back to the tool A requires a length of about 2 meters for the operation. The flexible drive alone which is as long as 2 meters is inconvenient to handle and, as far as there is no necessity for changing the direction of the tool A, an inflexible drive is not only more convenient to handle but serves a great deal for reinforcement. In Figure 3*a*, the periphery of the middle part of the metallic pipe F^1, excepting the part 60 cm. to 80 cm. from the pulley 10 and the part 30 cm. to 50 cm. from the tool A, is covered with an inflexible metallic pipe P_1 which is in its turn covered with another inflexible metallic pipe P_2. This pipe P_2 is shorter in length than the inflexible metallic pipe P_1. The inflexible metallic pipe P_1 is firmly fixed at its top end to the flexible metallic pipe F^1, and the exterior pipe P_2 slides on the interior P_1 so as to be capable of turning. It is connected at its lowest end to the bearing of the tool A by a connecting rod *l*.

The tool A is able to change its direction to A_1 or to A_2 as shown in Figure 3*a* by sliding the exterior pipe P_2 on the interior pipe P_1. The tool in the position A_1 is able to turn three dimentionally by turning the handle H_2 against the handle H_1. Accordingly when a horizontal change of direction of the tool as shown in Figure 1*b* and a three dimentional change of direction shown in Figure

BNSDOCID: <GB___1008015A__I_>

3*a* are combined, the tool can be turned to any direction at will.

As for the covering position of the pipe P_1, a comparatively long part of 60 cm. to 80 cm. on the side of the engine is left flexible and uncovered with the metallic pipe P_1, and the uncovered flexible part, as is seen from Figure 1*b*, is necessary for the driving axis to bend round to the operator's front from his back passing round his side in a large arc. If this part is too short, it will be impossible for the tool A to turn direction to a wide extent, and if the pipe of the drive bends around in a sharp curvature, the steel wire rope may break down. To prevent this bending of the pipe at too sharp a curvature, a strong spring S is provided to this part wound up over the flexible metallic pipe F^1, as shown in Figure 3*a* and this prevents too sharp a bending without losing flexibility. A part of 30 cm. to 50 cm. on the side of the tool A is left uncovered by the inflexible metallic pipe P_1 and corresponds with the minimum length needed to allow the tool A to turn direction by sliding the metallic pipe P_2 over the pipe P_1.

Figures 3*b* and 3*e* show a linking mechanism of the axis 20 of the pulley 10 with one end of the steel wire rope W and that of the axis 21 of the tool A with the other end of the steel wire rope W, and the fixing mechanism of both ends of the flexible pipe F^1, respectively. Both are similar in construction. An internally threaded fastener 22 may be unscrewed from an externally threaded holder 24 and the steel wire rope W and the flexible metallic pipe F^1 may be pulled apart. The holder 24 is provided with a slot 23, and this holder binds the periphery of the pipe F^1 and becomes loosened at the tip when the fastener 22 is undone and so the pipe F comes apart from the holder 24 and at the same time the end piece 25 of the steel wire rope W can slip out of a coupling device 26. Thus the dismantling is easy. As for the above mentioned pulley 10 or the tool A, when the nut 27 on the outside is taken off, the pulley 10 or the tool A can be removed from the respective bearing 28.

As shown in Figure 3*e*, the upper and lower holder 30 and 29 which hold the discoid cutter A when it is used for hoeing weeds, are respectively provided with a slanting surface, the slanting surface of the lower holder 29 being arranged to avoid the shock from stones in the earth and the slanting surface of the upper holder 30 being arranged to prevent the root of weeds from twining round or coming between the bearing 28 and the discoid cutter A.

Figure 3*f* shows how the handles H_1 and H_2 are fitted to the inflexible metallic pipes P_1 and P_2, respectively. When the handle H_0 is screwed in, a contact piece 31 presses against the outer surface of the pipe P_1 hard enough to hold it to its place, and when the handle H_0 is loosened a little, the contact piece 31 comes away from the outer surface of the pipe P_1 and the pipe P_2 can freely slide within the pipe P_1. As shown in Figure 3*a*, the handle H_1 is attached to the pipe P_1 employing the same construction as that used in attaching the handle H_2 to the pipe P_2 so that the position of the handle H_1 can be moved along the pipe P_1. This enables the distance between the handles H_1 and H_2 to be adjusted, and since these handles are gripped each with one of the operator's hands while he is operating the device, they can be adjusted to suit the operater as too long or too short an interval between the handles makes the operation difficult.

As shown in Figure 3*a*, a lever K of the clutch 13 for putting on and off the belt 11 and a lever C for opening and closing a fuel valve are fixed in the shorter pipe P_2. They are controlled by the leads 36 and 37 led along the drive.

As shown in Figures 3*a* and 3*c* a fastener 22^1 of the same construction as that of the fastener 22 shown in Figure 2*b*, is used for fixing the top end of the pipe P_1 onto the flexible metallic pipe F^1. Also it prevents the pipe P_1 from moving in the direction of the axis, but enables it to move in the circumferential direction. Thus the construction is adapted to allow the pipe P_1 to turn but to prevent it from moving in the direction of the axis by means of the screwed part 40 of the interposed pipe 22^{11}.

The tool A to be used with the device of this invention is not limited to the discoid cutter as illustrated, but it can be used, for example, as a grinder when replaced by a grindstone, or as a cleaner when replaced by a brush of wire or bristles. As the drive is flexible and vibration of the engine is not conveyed to the outside of the fitting frame, if the internal combustion engine fixed within the fitting frame is placed down on the ground, the discoid cutter can be fixed perpendicularly on a work-table like an ordinary circular saw, and can be used as a sawing machine. Moreover, when a screw propeller of a boat replaces the tool A and is lowered from the stern of a boat into the water, it can be used as a propeller for boat propulsion.

As mentioned above, the drive itself is constructed to be of light weight and that as no loss is caused by the friction as of gear wheels, and so the power of the engine E is communicated to the tool in an efficient manner. Thus, even an engine E of small size and power has in operations, such as felling, a great capacity for work and so the engine E is made relatively small and light.

Since the discoid cutter can be turned to any direction at will, the edge of the cutter can be applied vertically to any wood to be

BNSDOCID: <GB___1008015A__I_>

cut, and this contributes to the excellency of this invention in felling work in particular. To cite an illustration, a mowing machine hitherto in use, when it is provided with an engine of 50 c.c., can only cut wood of 5 cm. to 6 cm. in diameter at the most. However, that of the present invention, when it is provided with an engine of 35 c.c., can cut wood of 35 cm. to 40 cm. in diameter. As the tool A can be turned to any direction at will while it is operating, the operator in hoeing weeds or in cutting bushes with the device of this invention can hoe or cut away at any place whether it is a hilly place or the bottom of a ravine with uneven slopes no matter how sharp, or a tortuous foot path between rice fields. In lopping branches in a forest, no matter what direction branches spread, the rotating edge of the cutter can be applied to them perpendicularly and, furthermore, since the machine is of light weight and the fatigue given by the vibration is small, the operator with the machine of this invention can continue to work for a long time at a stretch.

WHAT I CLAIM IS:—

1. A portable device for carrying on an operator's back, including an outer frame arranged to be attached onto the operator's back, an inner frame within which an engine is fixed, the inner frame being pivoted at upper and lower points to the outer frame, a steel wire rope connected to the engine for transmitting drive to a working tool, which rope is covered by a flexible metallic pipe having an inside diameter slightly larger than the outside diameter of the steel wire rope, the part of the said flexible metallic pipe intermediate its ends being covered by two inflexible metallic pipes, the outer inflexible metallic pipe being connected with the bearing for a tool by means of a connecting rod in such a way that it can be slid on the inner inflexible pipe so as to turn the tool in any desired direction.

2. A device as claimed in claim 1, in which the outer frame is arranged to be attached onto the operator's back by means of shoulder belts connected to the outer frame, and the wire rope attached to the engine, when the device is mounted on an operator's back, being arranged to jut out from the said inner frame backwardly from the operator's back and to bend round to the operator's front by curving round his side in a large curve to the part covered by the inflexible metallic pipes, a flexible part of the rope of a small length being left uncovered near its end so as to allow turning of the direction of a tool arranged to be attached to the end of the rope.

3. A portable device for carrying on an operator's back, substantially as herein described with reference to the accompanying drawings.

Agents for the Applicant,
STANLEY, POPPLEWELL, FRANCIS & ROSS,
Chartered Patent Agents,
Cursitor House, 9, 10 & 11, Cursitor Street,
Chancery Lane, London, E.C.4.

Leamington Spa: Printed for Her Majesty's Stationery Office by the Courier Press.—1965.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

BNSDOCID: <GB___1008015A__!_>

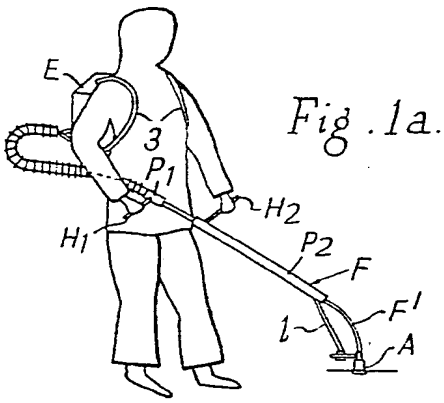
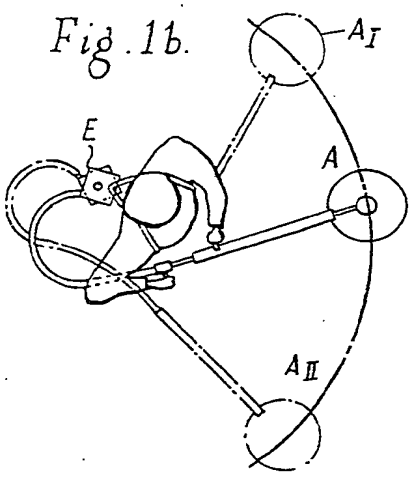


Fig. 1a.

Fig. 1b.



BNSDOCID: <GB___1008015A__I_>

1008015 COMPLETE SPECIFICATION
4 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheets 1 & 2

Fig. 2b.

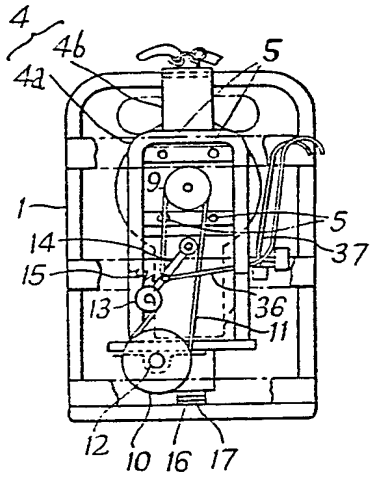


Fig. 2a.

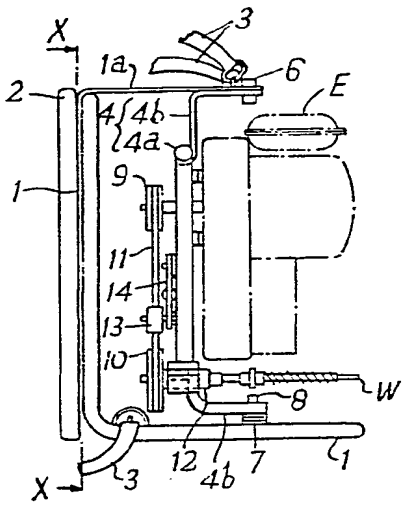


Fig. 2c.

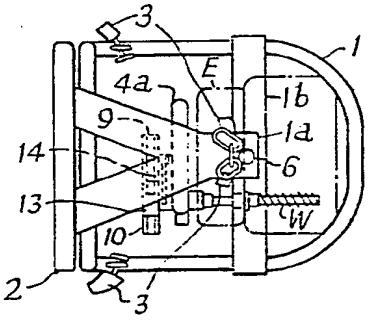
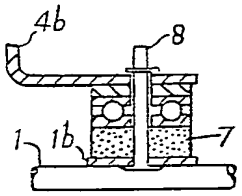


Fig. 2d.



BNSDOCID: <GB___1008015A__I_>

BNSDOCID: <GB___1008015A_I_>

1008015 COMPLETE SPECIFICATION
4 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheets 3 & 4

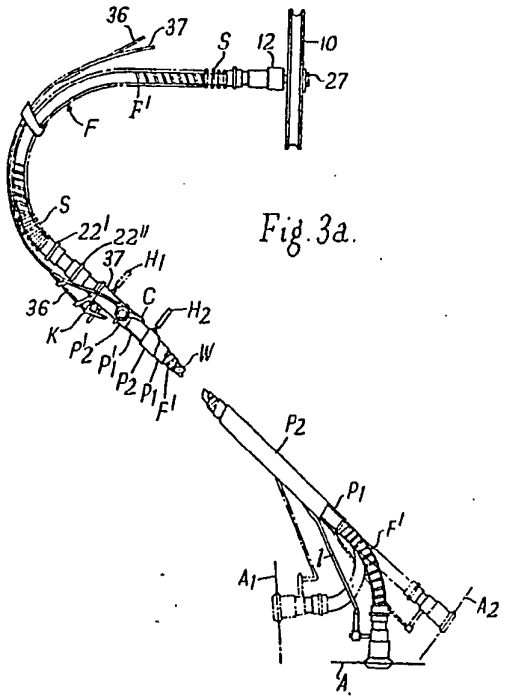


Fig.3a.

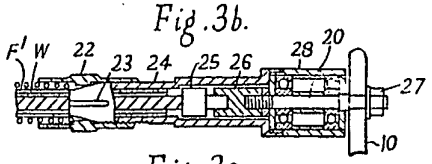


Fig.3b.

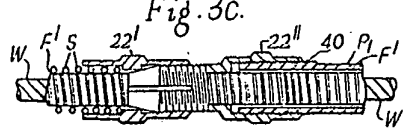


Fig.3c.

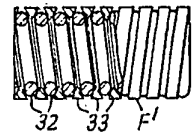


Fig.3d.

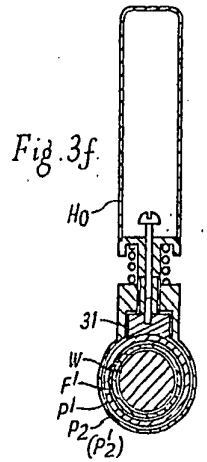


Fig.3f.

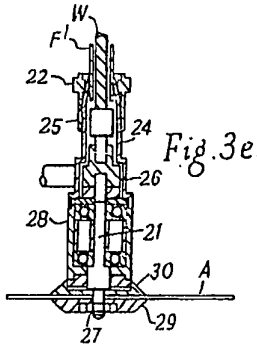


Fig.3e.

1008015 COMPLETE SPECIFICATION
4 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheets 3 & 4

Fig.3b.

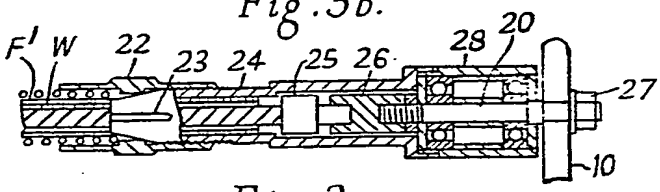


Fig.3c.

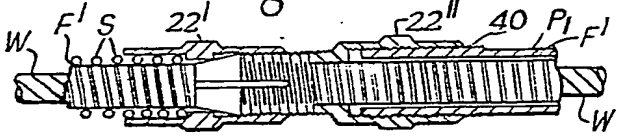
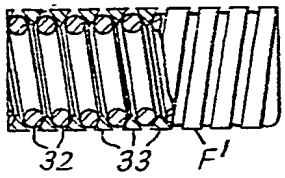


Fig.3d.



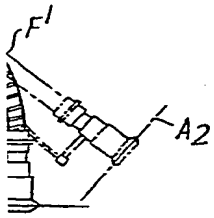
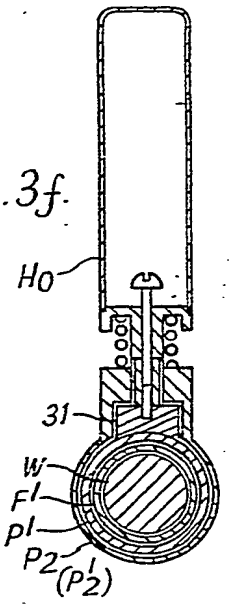


Fig.3f.



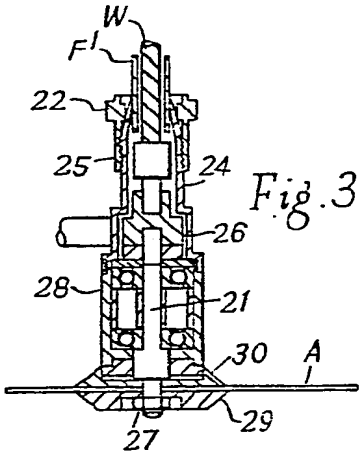


Fig.3e.

BNSDOCID: <GB___1008015A__I_>

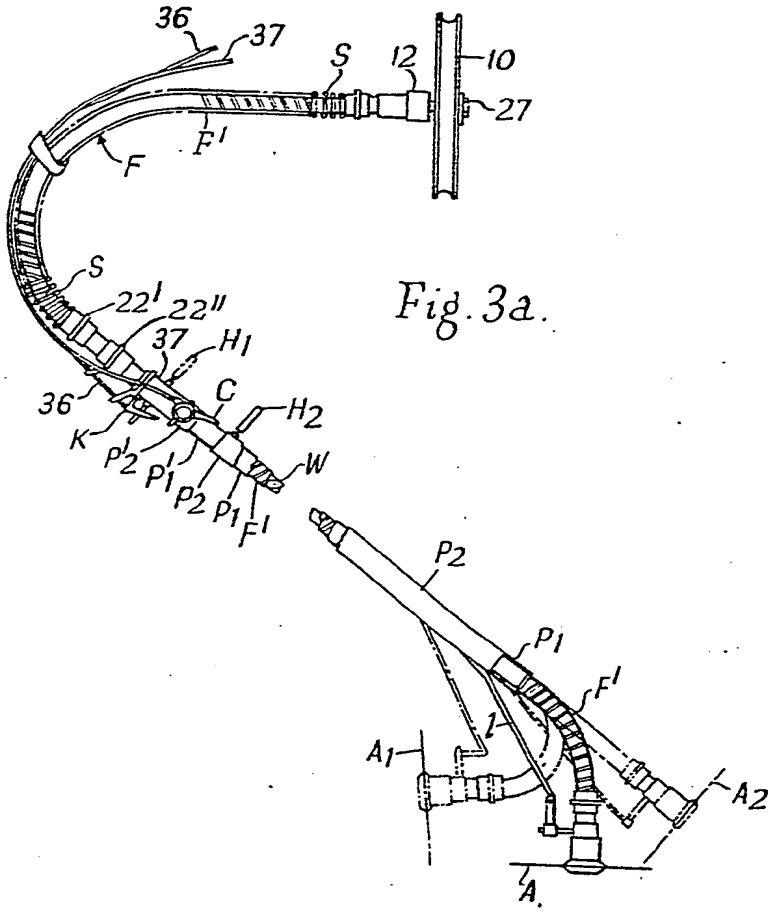


Fig. 3a.

BNSDOCID: <GB___1008015A__I_>

BNSDOCID: <GB___1008015A_1>

1008015 COMPLETE SPECIFICATION
4 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheets 1 & 2

Fig.1a.

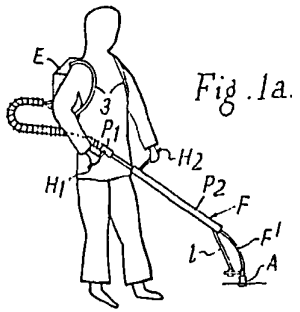


Fig.1b.

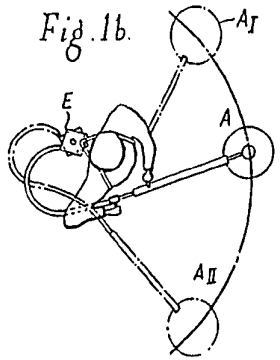


Fig.2b.

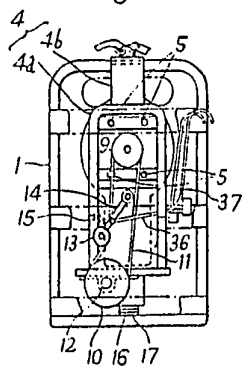


Fig.2a.

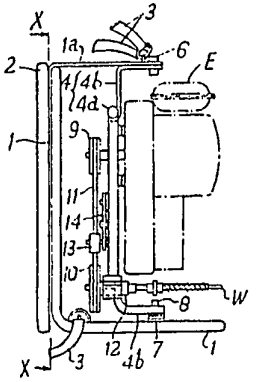


Fig.2d.

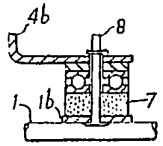


Fig.2c.